TARGET GENERATION FACILITY (TGF)
UNIVERSAL FLIGHT PLAN
INTERFACE CONTROL DOCUMENT

CHANGE 8

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CHANGE HISTORY

1993

This extensive rewrite of the document includes a large amount of new material in addition to format changes.

12/14/95

This document is being re-written to reflect changes in the format of the flight plan file used as input to TGF. This new file is meant to standardize flight plan input among the many groups involved in the creation of a simulation.

10/25/96

This revision of the document contains several field format changes, deletions and additions of fields, and provides a concise description of exactly how to create a flight plan file for TGF in appendix B. Any corrections to procedures described in previous versions will also be completed in this revision.

12/23/96

Added more information to Appendix B explaining the use of the interim altitude field.

09/21/96

Changed explanation of multiple commands in bracket logic from …multiple commands should be separted by commas to … multiple commands in bracket logic should be separated by a space.

12/22/98

Added a new field 'Project Specific' to support Y2K' distributed flight plans. Also documented the NAS_Speed_TAS field as it was being used and not documented. Updated the field length for the TGF_Route to 400 characters to reflect recent changes in TGF.

06/08/99

Modified aircraft type field specification to reflect the latest ATC rules. Also added a list of valid characters for the TGF_ROUTE field.

10/28/03

This revision of the document reflects the use of the UFP by the newest version of the Target Generation Facility simulator. There are significant changes in the way some fields are used but the field formats remain as in previous revisions.

EXECUTIVE SUMMARY

The Target Generation Facility (TGF) Universal Flight Plan is a file containing the data necessary to simulate realistic flights in a multi-sector air traffic control (ATC) environment. The ATC enviroment is created in the TGF by "flying" the aircraft in computer simulated airspace and generating actual radar signals that are input into the National Airspace System (NAS) enroute laboratory, the STARS laboratory, and the ARTSIIIA Laboratory. These simulated environments are used to support the Operational Test and Evaluation (OT&E) of Advanced Automation Systems (AAS) segments.

This Universal Flight Plan Interface Control Document (ICD) describes the functional interfaces and data file formats that are required to successfully simulate an ATC environment. The introduction section describes the scope of this document and includes a history of the flight sample files used by TGF in the past. This section also describes the primary sources for flight plan development. The Data Description section describes each of the fields of the file.

INTRODUCTION

SCOPE

This document provides a Target Generating Facility (TGF) user with an overview of flight plan development and contains a field by field explanation of the Universal Flight Plan File.

HISTORY

For the period from 1993 to 1994 the DATS program developed by Jim Miller was the primary source of flightplans for TGF.

From 1994 to 1995 TGF processed flight plan information, as extracted from SAR tapes and as provisioned by the customer. Many different interacting files were involved in this process, creating the formidable task of synchronizing any changes to these files. Also, changes to the flight plan, whether simple or extensive, required off-line processing and re-importing into the system. Often during a simulation it was wished that a change could quickly be made on-line.

From 1995 to 1996, the Universal Flight Plan File attempted to address the fore-mentioned problems. This file is the one file needed to provide flight plans for a TGF simulation. The format is in ASCII allowing quick changes on-line through any text editor. The Universal Flight Plan File is developed either through customer input via a Microsoft Excel Spreadsheet or from SAR analysis.

From 1996 to 2001, the Universal Flight Plan File has been working well. There have been some recent changes to the format of some of the fields, and some fields were deleted or inserted to support our continued development. This revision only updates the previous revision. No substantial changes have been made to the format overall.

Presently, the Universal Flight Plan File is now supporting the Next Generation Target Generation Facility. The simulator was re-hosted from single board computers and VxWorks, to PC's running Linux. The simulator is written in the Java programming language and is portable to any platform that supports Java. The use of the TGF portion of the file format (the first 20 fields) has some significant changes introduced. These changes are what will be covered by this revision.

FLIGHT PLAN DEVELOPMENT

Currently the development of flight plans for a simulation can be accomplished through several different methods. For enroute simulations an initial flight sample can be extracted from SAR tapes based on a given time period. This intial sample then needs to be run and modified to suit the specific simulation. For a terminal simulation an initial flight sample can be extracted from an ETMS data feed. This initial flight sample also will need to be refined in a similar fashion as a SAR extraction for an enroute flight sample. The customer may also choose to manually develop their own flight sample using either a MicroSoft Excel spreadsheet or TGF's web based utility, the UFP Editor .

MICROSOFT EXCEL

The customer will be provided with a Microsoft Excel Spreadsheet that will facilitate the manipulation of the flight plan. This spreadsheet can be used for the initial entry of the flight plans, or for modifications to an existing flight sample.

The resulting flight plans from user entry into the spreadsheet will be in the new Universal Flight Plan format and the process of testing and refining can begin. Further modifications can be done through the spreadsheet, a text editor, or other computer manipulation.

Computer System Requirements

The MS Excel Spreadsheet requires:

MS DOS 3.1 or later
MS Windows, Windows for Workgroups, or Windows NT 3.1 or later
386 SX or higher processor
8 Megs of RAM
SVGA 256 color video board

SYSTEM ANALYSIS RECORDING (SAR)

Before flight plans can be extracted from a SAR tape the customer will need to provide specific information regarding the involved sectors, time segments, and any other information dependent upon their requirements. This information is normally gathered during the initial planning stages of a simulation. The resulting flight plans will be in the new Universal Flight Plan format and the process of testing and refining can begin. Any further changes to the flight plans will be made manually and/or through computer manipulation.

ENHANCED TRAFFIC MANAGEMENT SYSTEM (ETMS) DATA

Similar to SAR recording extraction, the ETMS data feed allows TGF to pull real flights with their flight plans from any airport in the USA. TGF maintains a database of flights for a whole year. Given a date and an airport a flight sample can be automatically generated and be ready for further processing in a matter of hours.

UFP Flight Plan Editor

The online UFP editor can be reached through the TGF web page www.tgf.act.faa.gov look under the section for "Utilities Based on Web Start". This utility enforces the field format of the flight sample to minimize errors and also places the flight sample in the directory ready for the simulator to use. It can be reached anywhere that you can get access to the TGF web page.

DATA DESCRIPTION

UNIVERSAL FLIGHT PLAN DATA FILE

This data file has been designed for use by all groups involved in a simulation project. These groups include the customer, TGF, NAS, and ARTS. The file contains flight data associated with a particular Air Route Traffic Control Center (ARTCC). Each record is on a single line and contains data associated with an individual aircraft for a given sector. Upon completion, this file will then be used to initialize TGF, create a NAS simulation tape, and create the ARTS interfacility flight plans as needed for the specific simulation.

Field Descriptions

Reading Field Descriptions

Title Field

Provides a recognizable name to the customer and the TGF team.

General Description

This section provides general information about the field's uses and implications.

Format

This section describes the format of the data.

Key:

A - Alphanumeric
I - Positive integer
L - Letter
D - Decimal
[ ] - optional data
"" - Use verbatim.

Data Sources

This section describes the possible sources for the data.

TGF SAR ANALYSIS

Describes analysis of NAS SAR tapes, as provided by TGF. Details where the data comes from and what processing is performed.

TGF ETMS EXTRACTION

Data is captured in real time in daily operations and stored in a database for later time based queries and creation of flight samples.

TGF AUTO-GENERATION

TGF generated, using rules described in the post processing section. The ability to selectively post process data is supported. Data for some fields use a combination of other data fields and a set of rules.

USER ENTRY

The user provides the necessary data.

Usage

This section provides an explanation of how a particular field is implemented by NAS and TGF. Any special advantages or disadvantages that this field provides will be elaborated under the individual group's heading.

NAS TGF ARTS

Post Processing

This section describes any processing to the file after TGF has received the flight sample from the customer. Under the heading associated with each group, is an explanation of any process performed concerning this field.

NAS TGF ARTS

Field 1 TGF_Start_Time

General Description

The TGF start time is in units Hours:Min:Sec and is relative to the commencement of the simulation. (Eg. if a flight is to start 1 hour and 10 minutes into a simulation this time field will display 01:10:00.)

Format

II:II:II

Right Justified, HH:MM:SS, non-significant zeroes are included.

Data Sources

SAR Analysis	Yes
ETMS extraction	Yes
TGF Automation	No
Customer Supplied	Yes

Specific Usage

NAS

Not required.

TGF

Multiple flights can be started at the same time.

Post Processing

None required.

Field 2 TGF_Acid

General Description

This field contains the aircraft identification. This ID is used as the name of the flight both in discussion and in data reduction and analysis.

Format

LA[A][A][A][A][A]

Examples: N2
N271P
AAL9271

The format of this field is left justified, seven character maximum. The ID must start with a letter and be followed by one to six alphanumerics.

Data Sources

SAR Analysis	Yes
ETMS Extraction	Yes
TGF Automation	No
Customer Supplied	Yes

Specific Usage

NAS

Used as AID field (2) of NAS filed flight plan.

TGF

Used as TGF ACID.

Post Processing

NAS

None required.

TGF

None required.

Field 3 TGF_Complexity

General Description

Complexity allows the flexibility of flying a subset of flights from one large traffic sample. The number in this field identifies the flight's subset.
If subsets of a large sample are not needed then this field should be 1.

Format

A single digit ranging from 1 to 5. 5 includes all possible subsets, 1 is the smallest possible subset.

Example: 1

Data Sources

SAR Analysis	No
ETMS Extraction	No
TGF Automation	Yes
Customer Supplied	Yes

Specific Usage

NAS

Used to set up control cards on the NAS sim tape, indicating which level of complexity the aircraft should be included.

TGF

This field identifies the subset in which the aircraft is included, so that upon scenario initialization, if the operator selects this aircraft's subset identifier it will included in the sample along with all lower complexity level flights.

Example:

If Complexity 5 is chosen Complexity Levels 1,2,3,4,5 will be included.

If Complexity 3 is chosen only Complexity Levels 1,2,3 will be included.

Post Processing

None Required.

Field 4 TGF_Ac_Type

General Description

This field represents the type of aircraft and the airborne equipment qualifier. It may also include a number of flights indicating that more than one aircraft will be sharing this flight plan. This field also includes a weight class indicator.

Format

[[I]["B" , "H" , "T"]["/"]LA[A][A]["/"][L]

The format of this field is left justified , nine character maximum.

Example: 3H/C5A/R
B/B747/R
B707
3/F18/R

Data Sources

SAR Analysis	Yes
ETMS Extraction	Yes
TGF Automation	No
Customer Supplied	Yes

Specific Usage

NAS

Used as the aircraft data field (3) of NAS filed flight plan. This is the aircraft type that appears in the NAS data base and flight strips.

TGF

Used as TGF aircraft type to determine aircraft perfomance and navigational characteristics.

Post Processing

None required.

Field 5 TGF_Beacon

General Description

This field contains the Beacon code assigned to the aircraft. The beacon code must be unique within the flight sample (with the exception of VFR or 1200 beacon code aircraft).

Format

The format for this field is right justified, zero filled, representing octal beacon code.

Example: 0217
1432

Data Sources

SAR Analysis	Yes
ETMS Extraction	Yes
TGF Automation	No
Customer supplied	Yes

Specific Usage

NAS

Used as the beacon code field (4) of the NAS filed flight plan.

TGF

Used as the beacon code of the flight.

Post Processing

NAS

None required.

TGF

None required.

Field 6 TGF_VHF_Frequency

General Description

This field contains the air-to-ground VHF frequency for the initial (controlling) sector.

Format

The format of this field is up to a six digit decimal number, the decimal is assumed to be after the third digit.

Example 123.456 is written 123456

Data Sources

Sar Analysis	No
ETMS Extraction	No
TGF Automation	Yes
Customer Supplied	Yes

Specific Usage

NAS

Not Required.

TGF

The flight will begin the simulation in the sector controlled by this frequency. This frequency is also used to assign the flight to a sim pilot.

Post Processing

None required.

Field 7 TGF_Start_Speed_TAS

General Description

This field allows the input of a start speed, it contains the start speed in units of True Airspeed. This will be the speed the aircraft will fly as it begins the simulation. It is very important to provide the appropriate speed for the altitude at which the aircraft is entering the simulation. **(See Specific Usage / TGF below).**

Format

The format of this field is right justified, three integer digits in units of knots.

Example: 310

Data Sources

Sar Analysis	No
ETMS Extraction	No
TGF Automation	Yes
Customer Supplied	Yes

Specific Usage

NAS

Not used.

TGF

The simulator has it's own models for aircraft speed. For best results it is best to leave this field blank and let the simulator calculate the speeds. If you enter a speed it will override the simulator's calculations and the speed will be flown, regardless of the altitude, or manuever. This may cause unrealistic aircraft performance.

Post Processing

None required.

Field 8 TGF_Target_Speed_TAS

General Description

This field allows the input of a target speed, it contains the target speed in units of True Airspeed. This will be the speed the aircraft will approach after it enters the simulation. It is very important to provide the appropriate speed for the altitude at which the aircraft is entering the simulation. **(See Specific Usage / TGF below).**

After an aircraft starts it will approach the speed provided in this field.

Format

The format of this field is right justified, three integer digits in units of knots.

Example: 350

Data Sources

Sar Analysis	No
ETMS Extraction	No
TGF Automation	No
Customer Supplied	Yes

Specific Usage

NAS

Not used.

TGF

The simulator has it's own models for aircraft speed. For best results it is best to leave this field blank and let the simulator calculate the speeds. If you enter a speed it will override the simulator's calculations and the speed will be flown, regardless of the altitude, or manuever. This may cause unrealistic aircraft performance.

Post Processing

None required.

Field 9 TGF_Start_Altitude

General Description

This field contains the TGF starting altitude in units of hundreds of feet. Aircraft departing from an airport with A-, H- and P- type track stars will depart from the airport field elevation. Airport field elevation is provided in the TGF database.

Format

III

The format of this field is zero filled, right justified, three integer digits, in units of hundreds of feet.

Example: 270

Data Sources

SAR Analysis	No
ETMS Extraction	Yes
TGF Automation	Yes
Customer Supplied	Yes

Specific Usage

NAS

Not required.

TGF

Used as the starting altitude of the simulated aircraft.

Post Processing

NAS

None required.

TGF

Rule: The handoff altitude will be used for aircraft started in the air (E, V, C, O, and K-type track starts). For A,H, and P-type starts, TGF starting altitude is set to 0, andTGF will start the aircraft at the airport's elevation.

Field 10 TGF_Interim_Altitude

General Description

This field contains a controller-assigned interim altitude. It will be set to zero if no interim altitude exists.

Format

III

The format of this field is zero filled , right justified, three integer digits, in units of hundreds of feet.

Example: 270

Data Sources

SAR Analysis	Yes
ETMS Extraction	No
TGF Automation	Yes
Customer Supplied	Yes

Specific Usage

NAS

If non-zero, used as NAS field (76) in an interim altitude message issued for this flight. The interim altitude is displayed in the full data block on the controllers display.

TGF

This field will allow TGF to stop climbing/descending this aircraft as the aircraft proceeds to the target altitude. Controllers will need to clear the aircraft to continue its climb/descend once this altitude is reached.

Post Processing

None required.

Field 11 TGF_Target_Altitude

General Description

This field represents the altitude to which the aircraft will climb or descend, if it is different from the TGF starting altitude.

Format

III

The format of this field is zero filled, right justified, three integer digits, representing hundreds of feet.

Example: 450

Data Sources

SAR Analysis	No
ETMS Extraction	No
TGF Automation	Yes
Customer Supplied	Yes

Specific Usage

NAS

Not required.

TGF

Provides a way to have aircraft climbing or descending at the start of the flight. Airport departures with A- or H-type track starts will have their target altitude set to the ceiling of the sector in which they are started.

Post Processing

NAS

The following rules apply:

Target altitude will be set to the NAS assigned or interim altitude for Enroute starts.

Target altitude will be set to the ceiling of the initial sector into which the aircraft departs, based on analysis of fix posting areas (FPA) for A-type and H-type track starts.

Field 12 TGF_Start_Type

General Description

This field controls the way the aircraft enters the simulation. These start types have been included to provide profiles that support realistic simulations of aircraft as they are started in an exercise.

A - ARTS

The aircraft will depart an airport within an ARTS facility. The data extraction is based on the first operational NAS position that works the aircraft. The aircraft will start at the airport elevation and be climbing.

E - ENROUTE

The aircraft will (generally) be enroute from another sector or an adjacent facility.

P - PROPOSAL

The aircraft will depart an airport that is not within an ARTS facility. Therefore, the controller will be required to call for the aircraft to be released. The aircraft will start at the airport elevation and be climbing.

H - HOST/NON-HOST

The aircraft departure message will be processed by an adjacent center that is not in the simulation and passed to a center that is in the simulation.

V - VFR

The aircraft will file for IFR clearance while in the air.

C - DEPARTURE before the start of simulation, Second Sector.

The aircraft will depart an airport within an ARTS facility before the simulation started and the sector number (NAS_Sector data field) represents the second sector that would normally work the aircraft. The aircraft should be started at the handoff X/Y position (Gate X/Y data field), at the handoff altitude.

O - Oceanic Arrival

The aircraft is entering the sector of concern from Oceanic Control. TGF will provide the pilot prompt for this aircraft.

K- International Arrival

The aircraft is entering the sector of concern from Canadian or Mexican airspace. TGF will provide the pilot prompt for this aircraft.

Format

The format for this field is one character, alphabetic.

Example: A

Data Sources

SAR Analysis	Yes
ETMS Extraction	No
TGF Automation	No
Customer Supplied	Yes

Specific Usage

NAS

Determines the way NAS handoffs and departures are handled.

TGF

Determines if TGF start type is automatic or manual. A manual start requires that a controller clears the aircraft for takeoff. An automatic start does not requrie a clearance for takeoff.

Default Value: A

Post Processing

NAS

The way the aircraft is started on the SIM tape will vary by using the differing start types to best model the actual flights.

TGF

The beacon codes for the track starts will be modified to follow ATC procedures.

V - track start : beacon will be set to 1200.
O - track start: beacon will be set to 2100.
K - track start: beacon will be set to 2300.

Field 13 TGF_Nav_Equip

General Description

This field specifies the type of airborne navigation equipment available onboard the aircraft. The following are the valid equipment types:

A = DME, transponder with Mode C
B = DME, transponder w/o Mode C
C = RNAV, transponder w/o Mode C
D = DME only
N = TACAN, transponder w/o Mode C
P = TACAN, transponder w/ModeC
R = RNAV, transponder w/Mode C
S = Mode S with RNAV
W = RNAV only
X = VOR only

Currently detailed modeling is available for equipment types A, R, and S.

Format

L

Example: B

The format of this field is a single capital character.

Data Sources

SAR Analysis	No
ETMS Extraction	No
TGF Automation	Yes
Customer Supplied	Yes

Specific Usage

NAS Not required.

TGF

This field is now only used for presentation purposes within XPVD. The value in the field will show up on the aircraft id tag on XPVD.

Default Value: A

Post Processing

None Required.

Field 14 TGF_Nav_Type

General Description

This field describes the type of navigation model to be used for the flight.

The following are the supported types:

P = Perfect
G = Gps
D = DME/DME
V = VOR/DME

A moderate level of navigation error is supported. Broader modelling is under development.

Format

L

The format for this field is a single character from the above valid types.

Example: P

Data Sources

SAR Analysis	No
ETMS Extraction	No
TGF Automation	Yes
Customer Supplied	Yes

Specific Usage

NAS

Not required.

TGF

This field determines how the aircraft will be controlled by a controller.

Default Value: P

Post Processing

None required.

Field 15 TGF_ILS_Capable

General Description

This field is a legacy to the previous simulator. All aircraft are capable of making ILS approaches in the current simulator. The field is not currently supported by the simulator. The default value for the field will continue to be 'Y'.

Format

L

The format for this field is a single Captial character Y or N.

Data Sources

SAR Analysis	No
ETMS Extraction	No
TGF Automation	Yes
Customer Supplied	Yes

Specific Usage

NAS

Not required.

TGF

This field is a legacy to the old simulator, it does not matter what value is in it TGF does not use this field any longer. All aircraft are capable of ILS approaches.

Default Value: Y

Post Processing

None required.

Field 16 TGF_Piloted

General Description

This field is a legacy from the previous system. TGF does not use this field at all.

Format

L

Example: Y

Data Sources

SAR Analysis	No
ETMS Extracted	No
TGF Automation	Yes
Customer Supplied	Yes

Specific Usage

NAS

Not required.

TGF

Not required.

Default Value: Y

Post Processing

None required.

Field 17 TGF_Mil_op

General Description

This field denotes if the flight is a military operation and allows this flight any special manuervering that is not customary by commercial flights. This field is either (Y)es or (N)o. **This field is currently unsupported by the simulator.**

Format

L

Example: Y

The format for this field is a single character.

Data Sources

SAR Analysis	No
ETMS Extracton	No
TGF Automation	Yes
Customer Supplied	Yes

Specific Usage

NAS

Not required.

TGF

This field toggles any special processing that TGF has for military operations.

Default Value: N

Post Processing

None required.

Field 18 TGF_Departure_Runway

General Description

This field contains the aircraft's departure runway. Aircraft will depart by following the runway heading and will turn to join their route once manuervering altitude has been achieved.

Format

II{["L"]["R"]["C"]

Example: 09, 18L

The format for this field is left justified, zero-filled, two interger digits representing the runway name followed by an optional letter to denote one parallel runway from another.

Data Sources

SAR Analysis	No
ETMS Extraction	No
TGF Automation	Yes
Customer Supplied	Yes

Specific Usage

NAS

Not required.

TGF

TGF uses the runway name to initialize the flight on the correct runway for departure and provide the initial heading for the flight.

Post Processing

TGF

None required.

Field 19 TGF_Arrival_Runway

General Description

This field contains the aircraft's arrival runway. If a Standard Arrival Route (STAR) or Instrument Landing System (ILS) is being used on the approach, an arrival runway is required.

Format

II{["L"]["R"]["C"]}

Example: 09, 18L

The format for this field is left justified, zero-filled, two interger digits representing the runway name and an otpional letter to denote one parallel runway from another.

Data Sources

SAR Analysis	No
ETMS Extraction	No
TGF Automation	Yes
Customer Supplied	Yes

Specific Usage

NAS

Not required.

TGF

TGF uses the runway name to approach the correct runway and determine if the aircraft is landing.

Post Processing

TGF

None required.

Field 20 TGF_Route

General Description

This field contains the TGF route of flight. This is a list of navigational fixes and airways that make up the route the aircraft will travel. The aircraft will start at the initial fix and continue following each step of the flight plan until it terminates or lands at the final fix.

Format

Valid characters for this field are [A-Z, 0-9, space, equals, dot, semi-colon, left square bracket, right square bracket, forward slash, comma].

Data Sources

SAR Analysis	Yes
ETMS Extraction	Yes
TGF Automation	Yes
Customer Supplied	Yes

Specific Usage

NAS

Not required.

TGF

Used as the TGF route of flight.

Post Processing

None required.

Field 21 NAS_Route

General Description

This field contains the NAS route of flight. This is a list of navigational fixes and airways that make up the route the aircraft will travel. The aircraft will start at the initial fix and continue following each step of the flight plan until it terminates or lands at the final fix.

Format

Up to 48 elements as described in NAS documentation.

Data Sources

SAR Analysis	Yes
ETMS Extraction	Yes
TGF Automation	No
Customer Supplied	Yes

Specific Usage

NAS

Used as the route field (10) of the NAS flight plan for this aircraft.

TGF

Used as input to a process that creates the TGF flight plan.

Post Processing

NAS

None required.

TGF

This field is validated, conversions are performed and runway, heading, and altitude date are added to the flight plan.

Field 22 NAS_Cid

General Description

This field contains a unique numeric identifier for this flight.

Format

The format of this field is right justified, zero filled, three integer digits.

Example: 012

Data Sources

SAR Analysis	Yes	Typically, the CID from the SAR tape.
ETMS Extraction	Yes	
TGF Automation	Yes	
Customer Supplied	Yes	

Specific Usage

NAS

Used to specify multiple flight plans for a single ACID.

TGF

Used to specify multiple flight plans for a single ACID.

Post Processing

None required.

Field 23 NAS_Coordination_Fix

General Description

This field contains the fix in relation to which racility/sector will handoff, transfer control, or coordinate flight progress data. It represents the point where coordination should occur. For airport departures of the A- and P-type, this would be the airport fix.

Format

The format of this field is left justified, upto fifteen alphanumeric characters.

Example: POLUX180035

Data Sources

SAR Analysis	Yes
ETMS Extraction	Yes
TGF Automation	No
Customer Supplied	Yes

Specific Usage

NAS

Used as the coordination fix field (6) in the NAS filed flight plan.

TGF

May appear in the TGF route of flight.

Post Processing

NAS

None required.

TGF

Any NAS "tailoring" is removed and the coordination fix is used as the first step in generating the route of flight.

Field 24 NAS_Coordination_Time

General Description

This field contains the estimated time at the coordination fix (data field 23) for E-type track starts. For P- and A-type track starts, it contains the proposed track start time for the aircraft.

Format

The format of theis field is four integer digits representing HHMM.

Example: 1223

Data Sources

SAR Analysiss	Yes
ETMS Automation	No
TGF Automation	Yes
Customer supplied	Yes

Specific Usage

NAS

Used as the coordination time field (7) in the NAS filed flight plan.

TGF

Not required.

Post Processing

NAS

Rule: the track start time will be used.

TGF

None required.

Field 25 NAS_Track_Control

General Description

This field represents the secotor that controlled the aircraft previous to entering the simulation.

Format

The format of this field is right justified, zero filled, up to three integer digits.

Example: 01

Data Sources

SAR Analysis	Yes
ETMS Extraction	No
TGF Automation	Yes
Customer Supplied	Yes

Specific Usage

NAS

If the previous sector is in the simulation, a force message is issued to display the full data block on the previous sector's display. the aircraft is under control of the previous sector, but has bee handed off and has switched its rado frequency over to the sector of concern.

TGF

Not required.

Post Processing

NAS

The sector (data field 11) will be used.

TGF

None required.

Field 26 NAS_Sector

General Description

This field represents the initial (controlling) sector that will work the aircraft.

Format

The format of this field is right justified, zero filled, two digits.

Example: 02

Data Sources

SAR Analysis	Yes
ETMS Extraction	No
TGF Automation	No
Customer Supplied	Yes

Specific Usage

NAS

Used as the sector to receive control of this aircraft.

TGF

Not required.

Post Processing

None required.

Field 27 NAS_Filed_Speed_TAS

General Description

This is the speed "as filed" in a NAS flight plan.

Format

III

The format of this field is zero filled, right justified, three digits

Example: 350

Data Sources

SAR Analysis	Yes
ETMS Extraction	No
TGF Automation	No
Customer Supplied	Yes

Specific Usage

NAS

Used as the airspeed field (field 5) of the NAS filed flight plan.

TGF

Not required.

Post Processing

None required.

Field 28 NAS_Filed_Altitude

General Description

This field contains the altitude filed in field 8 or 9 of the NAS filed flight plan and may contain a block altitude.

Format

III["B"III]

The format of this field is zero filled, right justified, three digits. A total of seven characters is permitted in this field. Altitude is in hundreds of feet.

Example: 350
170B190

Data Sources

SAR Analysis	Yes
ETMS Extraction	No
TGF Automation	No
Customer Supplied	Yes

Specific Usage

NAS

Used as field 8 or 9 of NAS filed flight plan.

TGF

Not required.

Post Processing

None required.

Field 29 NAS_Hand_Off_Altitude

General Description

This field represents the altitude at which the aircraft was handed into the sector of concern, or the elvation of the aircraft at the gate fix, if needed. This field is also used as the gate altitude of an A- or H-type start that is using the gate X/Ys to simulate departure gating at an ARTS facility that is not controlled as part of the simulation.

Format

IIIIII

The format of this field is zero filled, right justified, three integer digits, in units of hundreds of feet.

Example: 450

Data Sources

SAR Analysis	Yes
ETMS Extraction	No
TGF Automation	Yes
Customer Supplied	Yes

Specific Usage

NAS

Not required.

TGF

Used as an interim altitude at the gate fix for A- and H-type starts.

Post Processing

None required.

Field 30 NAS_Assigned_Altitude

General Description

This field represents the aircraft's NAS altitude restriction, if an assigned altitude has been entered for the aircraft which differs from the filed altitude.

Format

IIIIII

The format of this field is zero filled, right justified, three integer digits in units of hundreds of feet.

Example: 270

Data Sources

SAR Analysis	Yes
ETMS Extraction	No
TGF Automation	Yes
Customer Supplied	Yes

Specific Usage

NAS

If the NAS interim altitude does not apply and the assigned altitude differs from filed altitude, this field is used as NAS field (76) in an interim altitude message.

TGF

Not required.

Post Processing

NAS

Rule: TGF target altitude will be used if field is left blank.

TGF

None required.

Field 31 NAS_Start_X

General Description

This field represents the X-coordinate at which the aircraft first appeared on the indicated sector's PVD.

Format

[I][I]I"."[I][I]

This field is a decimal number with up to seven characters, three digits before and three after the decimal point.

Example: 121.125

Data Sources

SAR Analysis	Yes
ETMS Extraction	No
TGF Automation	Yes
Customer Supplied	Yes

Specific Usage

NAS

Used as the X position of the track start point for the aircraft. This is the original handoff position, rounded to the nearest eight nautical mile.

TGF

Used as the X position of the aircraft's start point.

Post Processing

NAS

Rule: The coordination fix X will be used to fill in this field.

TGF

Rule: The coordination fix X will be used to fill in this field.

Field 32 NAS_Start_Y

General Description

This field represents the Y-coordinate at which the aircraft first appeared on the indicated sector's PVD.

Format

[I][I]I"."[I][I]

This field is a decimal number with up to seven characters, three digits before and three after the decimal point.

Example: 121.125

Data Sources

SAR Analysis	Yes
ETMS Extraction	No
TGF Automation	Yes
Customer Supplied	Yes

Specific Usage

NAS

Used as the Y position of the track start point for the aircraft. This is the original handoff position, rounded to the nearest eight nautical mile.

TGF

Used as the Y position of the aircraft's start point.

Post Processing

NAS

Rule: The coordination fix Y will be used to fill in this field.

TGF

Rule: The coordination fix Y will be used to fill in this field.

Field 33 NAS_Gate_X

General Description

This field represents the X-position of the departure gate used by the aircraft and is only used with A- and H-type track starts. This field is used to simulate the departure gates of an ARTS facility. If this field is used, the handoff altitude field should be set to the desired gate crossing altitude.

Format

[I][I]["."][I][I]

This field is a decimal number with up to seven charactrs, three before and three after the decimal point.

Example 153.125

Data Sources

SAR Analysis	Yes
ETMS Extraction	No
TGF Automation	No
Customer Supplied	Yes

Specific Usage

NAS

Not required.

TGF

The gating fix is inserted into the route of flight to simulate gating on departures that are not on the Standard Instrument Departure (SID). The handoff X position is also supplied, but this is not always suitable for use as the gate X position.

Post Processing

NAS

None required.

TGF

If a Fix Radial Distance (FRD) was specified, it will be converted into X/Y's and the X will be used in this field. This data will be checked to see that the gate X/Y fits into the flight plan.

Field 34 NAS_Gate_Y

General Description

This field represents the Y-position of the departure gate used by the aircraft and is only used with A- and H-type track starts. This field is used to simulate the departure gates of an ARTS facility. If this field is used, the handoff altitude field should be set to the desired gate crossing altitude.

Format

[I][I]["."][I][I]

This field is a decimal number with up to seven charactrs, three before and three after the decimal point.

Example 153.125

Data Sources

SAR Analysis	Yes
ETMS Extraction	No
TGF Automation	No
Customer Supplied	Yes

Specific Usage

NAS

Not required.

TGF

The gating fix is inserted into the route of flight to simulate gating on departures that are not on the Standard Instrument Departure (SID). The handoff Y position is also supplied, but this is not always suitable for use as the gate Y position.

Post Processing

NAS

None required.

TGF

If a Fix Radial Distance (FRD) was specified, it will be converted into X/Y's and the Y will be used in this field. This data will be checked to see that the gate X/Y fits into the flight plan.

Field 35 NAS_Start_Time

General Description

This field represents the time the aircraft will start on the TGF simulation pilot displays and the time that the NAS track will be started.

Format

IIIIII

The format of this field is right justified, zero filled, six digit integer number.

Example: HHMMSS
123456

Data Sources

SAR Analysis	Yes
ETMS Extraction	No
TGF Automation	No
Customer Supplied	Yes

Specific Usage

NAS

Used as NAS field (2) in a track start message issued for this aircraft.

TGF

Used as the start time of the aircraft.

Post Processing

None required.

Field 36 NAS_Hand_Off_Time

General Description

This field represents the actual time that handoff was initiated into the sector of concern.

Format

IIIIII

The format of this field is right justified, zero filled, six digit integer number.

Example: HHMMSS
123456

Data Sources

SAR Analysis	Yes
ETMS Extraction	No
TGF Automation	Yes
Customer Supplied	Yes

Specific Usage

NAS

Used as the time to initiate handoff of the aircraft into the sector of concern.

TGF

Not required.

Post Processing

NAS

Rule: The track start time plus 1 minute will be used.

TGF

None required.

Field 37 NAS_Hand_Off_Accept_Time

General Description

This field represents the time the receiving controller accepted the handoff.

Format

IIIIII

The format of this field is right justified, zero filled, six digit integer number.

Example: HHMMSS
123456

Data Sources

SAR Analysis	Yes
ETMS Extraction	No
TGF Automation	No
Customer Supplied	No

Specific Usage

NAS

Not required.

TGF

Not required.

Post Processing

None required.

Field 38 NAS_Est_Flight_Duration_Time

General Description

This field provides a time at which to send an RS message to NAS for the removal of flight data for this AC.

Format

IIIIII

The format of this field is right justified, zero filled, six digit integer number.

Example: HHMMSS
123456

Data Sources

SAR Analysis	No
ETMS Extraction	No
TGF Automation	No
Customer Supplied	Yes

Specific Usage

NAS

Used to provide a time in which to send an RS message to NAS essentially terminating the aircraft from the PVD.

TGF

Not required.

Post Processing

None required.

Field 39 ARTS_Pair1

General Description

This field contains the initial fix of a fix pair.

Format

The format of this field is left justified, upto fifteen alphanumeric characters.

Example: POLUX180035

Data Sources

SAR Analysis	No
ETMS Extraction	No
TGF Automation	No
Customer Supplied	Yes

Specific Usage

ARTS

This field is used to provide the intial fix of a fix pair for interfacility flight plans.

Post Processing

None required.

Field 40 ARTS_Pair2

General Description

This field contains the second fix of a fix pair.

Format

The format of this field is left justified, upto fifteen alphanumeric characters.

Example: POLUX180035

Data Sources

SAR Analysis	No
ETMS Extraction	No
TGF Automation	No
Customer Supplied	Yes

Specific Usage

ARTS

This field is used to provide the second fix of a fix pair for interfacility flight plans.

Post Processing

None required.

Field 41 Project_Specific

General Description

This field is for special uses as needed for a given project.

Format

The format is open to whatever is needed for the given project.

Data Sources

SAR Analysis	No
ETMS Extraction	No
TGF Automation	No
Customer Supplied	Yes

Specific Usage

NAS

Not required.

TGF

Not required.

Post Processing

None required.

Field 42 NAS_REMARKS

General Description

Contains remarks for the NAS flight plan.

Format

Alphanumeric, the length of this field and the route field combined must not exceed 250 characters.

Example: {H36,N25

Data Sources

SAR Analysis	Yes
ETMS Extraction	No
TGF Automation	No
Customer Supplied	Yes

Specific Usage

NAS

Used soley by NAS to contain remarks needed in building NAS simulation tapes.

Post Processing

None required.

UNIVERSAL FLIGHT PLAN FILE

Table of Data Fields

Field Number	Spreadsheet Column	Name	Type	Size (Number of characters)	Description
1	A	TGF_Start_Time	Numeric	8	Start Time in HH:MM:SS
2	B	TGF_Acid	Alphanumeric	7	Aircraft Identification
3	C	TGF_Complexity	Numeric	1	Complexity level assigned to flight
4	D	TGF_Ac_Type	Alphanumeric	9	aircraft Type identifier
5	E	TGF_Beacon	Numeric	4	Beacon code assigned to flight
6	F	TGF_VHF_Frequency	Numeric	6	Initial controlling frequency Speed of aircraft at start of sim.
7	G	TGF_Start_Speed	Numeric	3	Speed of aircraft at start of flight
8	H	TGF_Target_Speed	Numeric	3	Speed to approach after starting
9	I	TGF_Start_Altitude	Numeric	3	Starting altitude of flight
10	J	TGF_Interim_Altitude	Numeric	3	Controller assigned interim altitude
11	K	TGF_Target_Altitude	Numeric	3	Altitude to appraoch after starting
12	L	TGF_Start_Type	Alpha	1	Denotes how the flight should start (Hold for release, Automatic etc.)
13	M	TGf_Nav_Equip	Alpha	1	Denotes navigation equipment in use
14	N	TGF_nav_Type	Alpha	1	Denotes navigation rules to follow
15	O	TGF_ILS_Capable	Alpha	1	Toggles ILS capability
16	P	TGF_Piloted	Alpha	1	Toggles pilot control
17	Q	TGF_Mil_Op	Alpha	1	Toggles special military functions
18	R	TGF_Departure_Runway	Numeric	8	Departure Runway name
19	S	TGF_Arrival_Runway	Numeric	3	Arrival Runway name
20	Y	TGF_Route	Alphanumeric	400	Route of flight in TGF format
21	U	NAS_Route	Alphanumeric	250	Route of flight in NAS format
22	V	NAS_Cid	Numeric	3	Unique numeric identifier for flight
23	W	NAS_Coordination_Fix	Alphanumeric	11	PVD coordination point
24	X	NAS_Coordination_Time	Numeric	4	PVD coordination time
25	Y	NAS_Track_Control	Numeric	3	Sector previously controlling flight
26	Z	NAS_Sector	Numeric	2	Sector to control flight
27	AA	NAS_Filed_Speed_TAS	Alphanumeric	3	NAS filed true airspeed
28	AB	NAS_Filed_Altitude	Numeric	7	NAS field 8 or 9
29	AC	NAS_Hand_Off_Altitude	Numeric	3	Altitude aircraft is handed off
30	AD	NAS_Assigned_Altitude	Numeric	3	NAS altitude restriction
31	AE	NAS_Start_X	Numeric	7	X-Coord. On PVD at start of flight
32	AF	NAS_Start_Y	Numeric	7	Y-Coord. On PVD at start of flight
33	AG	NAS_Hand_Off_X	Numeric	7	x-Coord. Of departure gate
34	AH	NAS_Hand_Off_Y	Numeric	7	Y-Coord. Of departure gate
35	AI	NAS_Start_time	Numeric	6	Start time in HHMMSS
36	AJ	NAS_Hand_Off_Time	Numeric	6	Hand off time in HHMMSS
37	AK	NAS_Hand_Off_Accept_Time	Numeric	6	Hand off accept in HHMMSS
38	AL	NAS_Est_Flight_Duration_Time	Numeric	6	Length of flight in HHMMSS
39	AM	ARTS_Pair1	Alphanumeric	3	First fix of interfacility fix pair
40	AN	ARTS_Pair2	Alphanumeric	3	Seconf fix of interfacility fix pair
41	AO	NAS_Project_Specific	Alphanumeric	250	Special project field
42	AP	NAS_Remarks	Alphanumeric	250	NAS remarks for sim. Tape

EVENT FILE

The event file is an XML formatted data file that contains information to trigger actions during a simulation. These actions can be prompts to the simulation pilots, or commands to a flight. All of the events have a trigger associated with them. The file can be edited via the XML editor on the ECO (see ECO Manual for details).

The format of the file is as follows:

```
<?xml version="1.0" encoding="UTF-8?>
<SimEventObject>
  <SimEvent>
    <Predicate ClassName="TimePredicate" Args="00:38:00" />
    <Action ClassName="SpCommandAction"
          Args="NWA324, prompt Unable RVSM due to equipment failure please advise." />
  </SimEvent>
</SimEventObject>
```

Each event is composed of a Predicate and an Action tag enclosed by the <SimEvent> / </SimEvent> tags. In the predicate tag the classname of the predicate type, and it's arguments need to be specified. In the example this would be "TimePredicate" and "00:38:00". In the action tag the classname of the action type and it's arguments need to be specified. In the example this would be "SpCommandAction", and "NWA324, prompt Unable RVSM due to equipment failure please advise.". The argument String must contain the aircraft ID that is to receive the prompt, followed by a comma, the word "prompt", and the actual prompt to be sent to the pilot.

APPENDIX A

SAMPLE DATA FILES

A.1 SAMPLE Universal Flight Plan File

00:05:00,NWA834,1,L/B752,5761,128775,463,463,333,0,330,E,W,,Y,Y,N,,,ROD026009.ROD.FLM.AZQ200008,DTW./.ROD026009..ROD..FLM..AZQ200008..AMG.LEESE9.MCO,135,ROD026009,0005,98,98,463,330,33300,33000,298.6482,315.1191,298.6482,315.1191,000500,000600,000700,,,,,{ SNAPSHOT

A.2 SAMPLE Simulation Event FILE - pilot.evt

```
<?xml version="1.0" encoding="UTF-8"?>
<SimEventObject>
   <SimEvent>
      <Predicate ClassName="TimePredicate" Args="00:38:00" />
      <Action ClassName="SpCommandAction"
              Args="TWA32, prompt Need clearance around weather" />
   </SimEvent>
   <SimEvent>
      <Predicate ClassName="TimePredicate" Args="00:38:00" />
      <Action ClassName="SpCommandAction"
              Args="NWA324, prompt Unable RVSM due to equipment failure,
                        please advise" />
   </SimEvent>
   <SimEvent>
      <Predicate ClassName="TimePredicate" Args="00:38:00" />
      <Action ClassName="SpCommandAction"
              Args="USA103, prompt Request new heading" />
   </SimEvent>
   <SimEvent>
      <Predicate ClassName="TimePredicate" Args="00:38:00" />
      <Action ClassName="SpCommandAction"
              Args="DAL45, prompt Fire in cockpit!" />
   </SimEvent>
   <SimEvent>
      <Predicate ClassName="TimePredicate" Args="00:38:00" />
      <Action ClassName="SpCommandAction"
              Args="USA224, prompt Medical emergency on board" />
   </SimEvent>
   <SimEvent>
      <Predicate ClassName="TimePredicate" Args="00:38:00" />
      <Action ClassName="SpCommandAction"
              Args="UAL412, prompt Experiencing turbulence, request new
                            altitude" />
   </SimEvent>
```

```
</SimEventObject>
```

Appendix B

Manually Creating TGF flight samples.

If you have been tasked to write a TGF flight sample this document is designed to get you on to a fast start. You'll be using either the Flight Plan editor or an Excel spreadsheet initially to create the flight samples, or secondary to a SAR or ETMS extraction of flight plans to correct any problems. Information for the fields or columns with labels beginning with TGF or ARTS (only if interfacility communication with ARTS is required) will need to be completed. The spreadsheet is usually set up to only show the columns that you will need to complete. It would be helpful to read through the field descriptions provided in section IV of this document for the field names beginning with Tgf & Arts so you understand the formats for each field and how the TGF uses the field when it reads the data into the simulator.

It is possible to view the flight plans periodically as they are being developed. This is accomplished by running a tool called Xpvd. This tool provides a display of the simulated airspace. The displayed maps are from a NAS view of the airspace and actual ARTS digital maps can be overlayed, providing a very realistic view of the flight sample. This tool is available directly on the ECO. The ARTS, and NAS labs are not involved.

The best approach to developing flight plans is to enter or import the data and begin viewing the flight plans on Xpvd, make corrections, and view them again. Continue the process until an acceptable flight plan has been developed.

Field 20 Rules for writing a TGF Route

The following explanation has been written for aviation novices and experts alike, read what you need and ignore the rest.

A few terms to understand before we proceed:

Fix : a physical radio beacon located on the ground at a specific geographic point. This type of fix is a VOR (VHF Omnidirectional Range) and it is always referred to by a three letter identifier in a flight plan. (eg. PKD)

Waypoint: a specific geographic point in space. This type of fix is always referred to by a five letter identifier in a flight plan. (eg. VALOR)

Fix-Radial-Distance (FRD): a fix that is determined by referring to another fix's position, a certain radial from that fix, and a certain distance from that fix.(eg. PKD035025 is a point located 35 degrees and 25 miles from PKD)

SID: Standard Instrument Departure is a route an aircraft will follow immediately upon take-off.

Basic TGF flight plan:

TGF expects a flight plan to be a string of fixes (eg. waypoints, FRD's, vor's) separated by a single dot.

.

For example: **PKD.VALOR.PKD035025**

The above flight plan instructs TGF to fly from PKD to VALOR to PKD035025. The flight will terminate at PKD035025. This is the simplest type of flight plan. The aircraft will simply fly point to point.

Adding Routes:

Routes are added by using the name of the route in the flight plan and providing an entry fix before the route name and exit fix after the route name . The preceding and following fix must be a valid fix on the route. There are'nt any special separators to worry about, just continue separating pieces of the flight plan with a single dot (".").

For example: **PKD.VALOR.J31.PKD035025**

The above route instructs TGF to fly from PKD to VALOR, an entry fix for J31, and join route J31 heading in the direction of the exit fix PKD035025. The flight will terminate at PKD035025.

Bracket Logic:

TGF will fly the above flight plans automatically without intervention from pilots. If desired the controller can call the pilot and cause a change in the dynamics of the aircraft (eg. heading,speed, and altitude). If an aircraft is expected to make changes to speed, altitude or heading without controller intervention bracket logic can be used to effect these changes.

The brackets [ ] are inserted between the fix to which the logic is being applied and the separating dot.

For example: **PKD.VALOR[cmd = a080 s250].PKD035025**

TGF will attempt to cross VALOR at 250kts and 8000ft.

Another example: **PKD.VALOR[cmd = h340].PKD035025**

The above flight plan will cause TGF to leave the flight plan at VALOR and continue the flight on a vector of 340 degrees. The flight plan can not be resumed unless directed by a controller to resume flight plan. In which case the aircraft will turn to the next fix in the flight plan no matter where that fix is located.

In most cases, bracket logic is used to restrict the crossing of a fix at certain speeds and altitudes, or to cause an aircraft to fly a SID (Standard Instrument Departure) without controller intervention.

The bracket logic command format is as follows:

cmd=hNNN 3digits, range 1-360, zero filled
cmd=sNNN 3digits, range 1-999, zero filled
cmd=aNNN 3 digits, range 1-999 in hundreds of feet, zero filled

For multiple commands in a single bracket separate commands with a space.

BWI.PKD.VALOR[cmd=s250 a080].PKD035025.DUPNT3.PHL

The above flight plan instructs TGF to depart BWI proceed to PKD, cross VALOR at 250kts and 8000ft, proceed to PKD035025, an entry fix for DUPNT3, and head in the direction of the exit fix PHL.

With this most recent version of the simulator all possible simpilot commands can be executed through the use of bracket logic. **(See the Simulation Pilot Operations Guide for available commands and usage.)** The most important development from the expansion of bracket logic commands is the ease in simulating SID's. It is possible to give all the necessary commands to an aircraft as they reach each fix in their flight plans.

Support Fields (Some general considerations)

The main part of a flight plan is the route of flight but there are many other fields that support the route of flight and allow more control over how the aircraft will behave in the simulation. This section should help explain how to use these support fields to achieve desired realistic effects.

The fields that must be completed to create a valid flight plan have field names beginning with **TGF**. The field format and content is explained in Data Description section, the following is a list of previously experienced air traffic control situations and how they were accomodated in the flight plans.

Call for release:

Change TGF_Start_Type field to "P".

Starting at an altitude and climbing or descending:

There is often a need for aircraft to start at one altitude and be changing altitude. This is achieved by using the TGF_Start_Altitude and TGF_Target_Altitude fields. Enter the start and target altitudes into their respective fields. If an aircraft is to initiate into level flight enter the altitude into the TGF_Target_Altitude field leave TGF_Start_Altitude blank.

Ghost sectors and VHF frequency field:

Since representing all the sectors involved in real air traffic control can become a costly challenge it is often decided to simplify the simulation by combining many sectors into one or more ghost sectors manned by a controller to hand the aircraft off to a controlled sector. Every controlled sector and these ghost sectors must be represented by a unique VHF frequency. This frequency is entered into the TGF_VHF_Frequency field.

Multiple traffic volumes and complexity level:

It is possible to create different volumes of traffic by assigning complexity levels to the flight plan. Begin by making your smallest sample and assigning complexity level 1 to these flight plans. When you add more traffic increase the complexity level assigned to these flight plans. Repeat this process for each successive addition of traffic. There is a limit of 5 levels of complexity. When all the traffic has been added it is now possible to run the entire sample by selecting the highest complexity or a fraction of the sample by selecting the appropriate complexity level at the start of a TGF scenario.

Approaches other than ILS:

Currently, TGF only supports ILS approaches. Other types of approaches have been simulated by creating an imaginary ILS, either along the runway centerline or along some approach path to an airport.

We also can simulate a visual approach by setting up an xpvd workstation between two sim pilots. A controller can then watch the aircraft as they approach the airport and give the necessary commands to the pilots. The result is a realistic visual approach as seen by the terminal controller.

Interim Altitude field and Interfacility Flight Plans:

TGF has a process to create interfacility flight plans for ARTS based on information given in the UFP. The Interim altitude field is used to enter an altitude that a controller expects to see a departing aircraft before it is handed off. This field does not effect the simulation of the flight but it is very important to the process that creates the interfacility flight plan.